

IN THE CLAIMS:

1 - 17. (Cancelled)

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~~18.~~ (Currently Amended) A trench capacitor comprising:

a crystalline silicon substrate including deep trenches having hydrogen baked surfaces in the substrate that are substantially free of native oxide; and

a dielectric stack, including a continuous monocrystalline silicon nitride layer, formed on the hydrogen baked surfaces of the trenches, the dielectric stack for forming a node dielectric between electrodes of the trench capacitor.

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~~19.~~ (Original) The trench capacitor as recited in claim ~~18~~, wherein the crystalline silicon nitride layer includes a thickness of between about 3 Å and about 40 Å.

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~~20.~~ (Original) The trench capacitor as recited in claim ~~18~~, wherein the dielectric stack includes an oxidized amorphous nitride layer.

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~~21.~~ (Previously Added) The trench capacitor as recited in claim ~~18~~, wherein the crystalline nitride layer is between 2 and 6 atoms thick.

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~~22.~~ (Previously Added) The trench capacitor as recited in claim ~~18~~, wherein the crystalline nitride layer includes stoichiometric Si_3N_4 .

6/23. (Currently Amended) A trench capacitor comprising:

a crystalline silicon substrate including a trench having a surface formed in the substrate,
the surface being hydrogen baked to be substantially free of native oxide;

a continuous monocrystalline silicon nitride layer, formed on the hydrogen baked surface
of the trench; and

an amorphous silicon nitride layer formed on the crystalline silicon nitride layer, the
crystalline silicon nitride layer and the amorphous silicon nitride layer for forming a dielectric
between electrodes.

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24. (Previously Added) The trench capacitor as recited in claim 23, wherein the
crystalline silicon nitride layer includes a thickness of between about 3 Å and about 40 Å.

8/25. (Previously Added) The trench capacitor as recited in claim 23, wherein the
amorphous nitride layer is oxidized.

9/26. (Previously Added) The trench capacitor as recited in claim 23, wherein the
crystalline nitride layer is between 2 and 6 atoms thick.

10/27. (Previously Added) The trench capacitor as recited in claim 23, wherein the
crystalline nitride layer includes stoichiometric Si_3N_4 .

28. (Previously Added) The trench capacitor as recited in claim 23, wherein the electrodes includes a storage node and a buried plate.

29. (Previously Added) The trench capacitor as recited in claim 23, wherein the crystalline nitride layer provides a gate dielectric layer.

30. (New) A trench capacitor comprising:

a crystalline silicon substrate including deep trenches having surfaces in the substrate substantially free of native oxide; and

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work a dielectric stack, including a continuous monocrystalline silicon nitride layer, formed on the surfaces of the trenches, the dielectric stack for forming a node dielectric between electrodes of the trench capacitor.

31. (New) The trench capacitor as recited in claim 30, wherein the crystalline silicon nitride layer includes a thickness of between about 3 Å and about 40 Å.

33. (New) The trench capacitor as recited in claim 30, wherein the dielectric stack includes an oxidized amorphous nitride layer.

33. (New) The trench capacitor as recited in claim 30, wherein the crystalline nitride layer is between 2 and 6 atoms thick.

*Did
could*

34. (New) The trench capacitor as recited in claim 30, wherein the crystalline nitride layer includes stoichiometric Si_3N_4 .
